

THESE MINUTES ARE SUBJECT TO APPROVAL BY THE SUSTAINABLE ENERGY COMMISSION

The Sustainable Energy Commission held a regular meeting Thursday, September 15, 2016 in shared meeting room 3 of the Municipal Center located at 3 Primrose Street, Newtown, CT 06470.

The meeting was called to order by Chairman, Kathy Quinn at 7:08p.m.

Present: Chairman Kathy Quinn, Mark Sievel, Dave Stout

Also Present: Fred Hurley

Absent: Joseph Borst, George Brown, Steve Gogliettino, Jeff Jorgenson, Karen Pierce, Barbara Toomey

Communications: Ms. Pierce notified Ms. Quinn of a Thursday night conflict that will require her to resign her position on the Sustainable Energy Commission.

The commission will review a proposal for Nunnawauk Meadows. It is the first housing project like this in the state. Mr. Hurley encouraged the commission to help Nunnawauk by generating questions for the developer.

SolomonEnergy Virtual Net Metering was discussed (att.) for the High School and possibly Middle Gate, Head 'O Meadow and Hawley School. Mr. Hurley asked the commission to review and come back with questions.

Mr. Hurley will attend an upcoming COST (Council of Small Towns) and sit on a panel which will discuss Virtual Net Metering.

Public Comments: none.

Acceptance of Minutes: This item was tabled as there was no quorum to hold a vote.

Business:

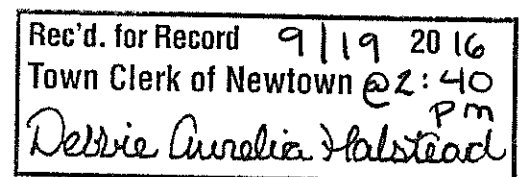
- a. **Status of Landfill Solar Projects:** The Town is waiting on the interconnection agreement to be negotiated. The site is ready to go.
- b. **Reed School solar project:** The PPA (Power Purchase Agreement) is fine per the Town attorney. The interconnection application has been submitted; the paperwork will be completed in the next one to two weeks. The other Reed units will go to the new Hook & Ladder firehouse.
- c. **Energy Savings program update**

Municipal Center: The Town is waiting on final sign off from Eversource.

Waste Water Treatment Plant: The Town is waiting on final sign off from Eversource.

Middle Gate School: The gas line is up and running.

Edmond Town Hall: no update.



- d. **Microgrid feasibility study:** No update. Garner Correctional Facility has some open areas that may be good for a solar project.
- e. **Street Lighting:** The RFP is still being worked on. There have been four respondents to the proposal: three from CCM (Connecticut Conference of Municipalities) and one from CL&P.

Additional Items for discussion:

- 1. **EV Charging stations:** The Department of Public Works is looking to purchase one electric vehicle using non-recurring capital and by applying for grants. Mr. Hurley wants to put a charging station in the back of the municipal center and one at the town garage. An appropriate time to apply for a charging station grant is when the Edmond Town Hall renovates the parking lot.
- 2. **Municipal Energy Plan:** no update.
- 3. **Portfolio Manager:** no update.
- 4. **Budget and Grant Spending:** no update.
- 5. **Web Site:** no update.
- 6. **Outreach to Schools:** no update.
- 7. **Bridgeport Eco-Park:** no update.
- 8. **Ban on Fracking Waste:** no update.
- 9. **Organic Recycling:** The program has over 350 participants. An application was submitted to CCM (Connecticut Conference of Municipalities) for program recognition.

Adjournment: There was no quorum present to hold an official meeting; discussion concluded at 7:44pm.

The next regular meeting will be held on October 20, 2016.

Attachment: SolomonEnergy Benefits of Solar Virtual Net Metering

Submitted, Susan Marcinek, clerk



SolomonEnergy

Town of Newtown, Connecticut

Solar Virtual Net Metering Benefits of

August 31, 2016

DISCLAIMER AND CONFIDENTIALITY: All data and information contained herein and provided in connection with this document is based on preliminary estimates and is for evaluation purposes only. It is subject to adjustment or modification by Solomon Energy, and is considered confidential and proprietary. The data and information contained herein may not be reproduced, published or distributed to, or for, any third parties without the express prior written consent of Solomon Energy. Copyright © 2016 Solomon Energy. All Rights Reserved.



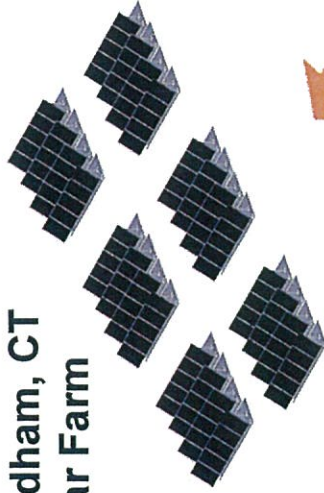
Summary of Newtown Benefits

Newtown's VNM entitlement	<ul style="list-style-type: none">Newtown entitled to up to 3 MW of virtual net metering, generating considerable savings over next 25 years
Net benefit to Taxpayers	<ul style="list-style-type: none">Eversource applies Rate 30 credit to city utility bills (subject to change every 6 months), offsetting solar cost for Eversource bills.
2 pricing options for solar credits	<ul style="list-style-type: none">Fixed rate of \$.0975/kWh for 6 years with 2% escalator OR20% guaranteed savings, min. \$.085/kWh
No rooftops required	<ul style="list-style-type: none">VNM avoids costs, disruption, siting issues
No impact on current supply agreements	<ul style="list-style-type: none">Supply agreements with Eversource or third parties remain in placeNewtown can continue to seek savings from 3rd party suppliers
Timing	<ul style="list-style-type: none">ALLCO now building a project for Plainville and Westport. Additional project likely for Q2 17.
Qualification	<ul style="list-style-type: none">Newtown application needs to be added to new waiting list since after April 13, 2016 legislative deadline. But Eversource says likely to be accepted as others fail.
Flexibility	<ul style="list-style-type: none">Solar credits applied to designated meters which can be changed once a year (e.g., to city or school accounts)

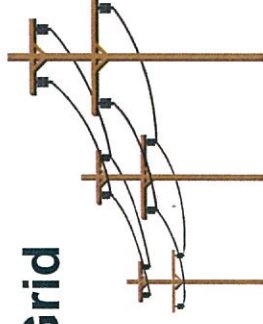
Virtual Net Metering Credits

How VNM Credits Lower Bills

Windham, CT
Solar Farm



Grid



4,350,000 kWh

Delivered to utility grid

Eversource credit, now
applied to utility bills, for
4,350,000 kWh



Town of Newtown

Newtown pays ALLCO

- \$0.0975/kWh OR
- 80% of credit (min \$0.085/kWh)



Savings Example if \$.0975/kWh Payment Option

Assume the following:

- Newtown has a supply arrangement with a 3rd party supplier for \$.083/kWh for 3 years.
- Assume Eversource T&D (Transmission and Distribution) is \$.02/kWh.
- Assume Town consumes 300,000 kWh per month. (Of course, volumes will vary.)
- Assume Town subscribes to 2 MW solar credits (200,000 kWh per month).

Monthly bill without VNM

Generation: (\$.083x300,000):
T&D charge: (\$.02x300,000):

\$24,900
\$6,000

Monthly bill with VNM

Generation: (\$.083x300,000):
T&D charge: (\$.02x300,000):
VNM credit: (\$.12x200,000):
ALLCO PPA: (\$.0975x200,000):

\$24,900
\$6,000
\$24,000
\$19,500

Net Cost:

\$30,900

Net Cost:
\$25,400

Note: Monthly savings will change based on changes in the VNM credit. If VNM credit drops below \$.0975 monthly cost will increase.



SolomonEnergy

Savings Example if 80% of Credit Payment Option

Assume the following:

- Newtown has a supply arrangement with a 3rd party supplier for \$.083/kWh for 3 years.
- Assume Eversource T&D (Transmission and Distribution) is \$.02/kWh.
- Assume Town consumes 300,000 kWh per month. (Of course, volumes will vary.)
- Assume Town subscribes to 2 MW solar credits (200,000 kWh per month).

Monthly bill without VNM

Generation: (\$.083x300,000):
T&D charge: (\$.02x300,000):

\$24,900
\$6,000

Monthly bill with VNM

Generation: (\$.083x300,000):
T&D charge: (\$.02x300,000):
VNM credit: (\$.12x200,000):
ALLCO PPA: (\$.096x200,000):

\$24,900
\$6,000
\$24,000
\$19,200

Net Cost:

\$30,900

Net Cost:
\$26,100

Note: Monthly savings will change based on changes in the VNM credit. If VNM credit drops below \$.085 monthly cost will increase.



SolomonEnergy



Process for Securing VNM Program

Letter of intent	<ul style="list-style-type: none">• Town must enter into a Letter of Intent with ALLCO, a solar developer, authorizing ALLCO to attempt to secure up to 3 MW of Eversource's limited VNM capacity
Waiting list	<ul style="list-style-type: none">• Newtown joins waiting list announced by Eversource. Currently only two towns, represented by Solomon, are on the list for additional capacity (Plainville and Westport).
Legislative history	<ul style="list-style-type: none">• In February, under pressure from towns that had been closed out by Eversource, Senate took up a bill to increase VNM pool
Bill passed	<ul style="list-style-type: none">• In May, the legislature passed bill to increase utility maximum credit pool by \$6 million, effective 7/1, for applications received before 4/13/16.
Newtown comes off waiting list	<ul style="list-style-type: none">• In July, Eversource advised Solomon that a new waiting list will be established and advised us that 12 CT on the waiting list before the 4/13/16 deadline and have been cleared for VNM.
Projected completion	<ul style="list-style-type: none">• Q1 2017: ALLCO's anticipated date for completion of its first VNM project in Windham, CT. Meantime, ALLCO has secured more land for additional projects.
Towns apply for increased allocation	<ul style="list-style-type: none">• Two towns represented by Solomon, Plainville and Westport, have applied for additional VNM capacity.



Overview of CT VNM Program

VNM Program	<ul style="list-style-type: none">• Enacted in 2011 -- Public Acts 13-298 & 12-247
Program size	<ul style="list-style-type: none">• Originally \$10 million maximum credits (80% for Eversource, 20% for UI)• Increased to \$16 million as of 7/1/16
How does it work?	<ul style="list-style-type: none">• Remote solar farm, built anywhere in utility's service area, delivers production to the utility• Utility provides solar benefits to VNM consumers via monetary credits to utility bills
Who is eligible?	<ul style="list-style-type: none">• State agencies – Maximum of 40%• Municipal governments – Maximum of 40%• Agricultural consumers – Maximum of 40%
Size Limits	<ul style="list-style-type: none">• Originally 2 MW, now 3MW, per system (systems can be "stacked;" some towns will take more than 3 MW)
How much is credit?	<ul style="list-style-type: none">• Relatively high Class 30 rate (Newtown current rate likely at lower Class 35 rate) at solar farm meter plus declining percentage of T&D (Y1- 3: 80%, 60%, 20%)
Excess credits?	<ul style="list-style-type: none">• Banked as utility bill credits up to 5 specific customer accounts one month after production



SolomonEnergy

Key Players

- ALLCO: Solar developer, builder of solar farm
- Eversource: Utility territory in which solar farm built.
Utility that credits Newtown's bills with offset rate.
- Solomon Energy: ALLCO representative in CT.
- Newtown, CT: Recipient of solar energy credits.
- Windham Solar LLC: Owner of solar farm project. Members of the LLC receive federal and state tax benefits, ZREC revenue, and other incentives.



Detailed Benefits

- **Savings.** Depends on Newtown's price option. If Newtown chooses \$.0975/kWh with escalator, savings for 2016 would have been \$101,312. If Newtown chooses 80% of credit with \$.085/kWh floor, the savings for 2016 would have been \$107,837.
- **Q1 2017 Start Date.** ALLCO Renewable Energy, the solar developer that has entered into a Letter of Intent with Newtown, expects to begin construction this Fall with commissioning as early as Q2 2017. Savings would begin immediately.
- **No need to install on Town's roofs.** Rooftop solar requires that roofs be in good condition (and will last for at least 20 years). To obtain maximum production rooftop solar often requires removing trees and other shade-casting obstacles like flagpoles or cooling systems. VNM avoids rooftop issues.
- **No out-of-pocket cost.** Unlike many other solar construction projects, Newtown would incur no expense prior to receiving net benefits via the VNM program.
- **No construction risk.** All construction risk is the developer's, not the Town's. The Town only pays for kilowatts produced by the VNM project. In the event the project stops producing, both Eversource and Newtown would stop paying for the solar and for the solar credits, respectively.
- **Economies of Scale.** By building a large solar farm ALLCO can deliver a cost that is substantially lower than a rooftop system.
- **No change in Supplier Contracts.** All existing supply contracts, if any, can remain in place, meeting the Town's other needs and preserving current hedging programs.
- **Flexibility.** Future energy efficiency projects would not be constrained (provided that total consumption does not drop below the 3 MW capacity (or about 4,350,000 kWh per year).
- **If fixed price option, hedge against future utility rate increases.** Utility prices are volatile. The \$.0975/kWh + escalator would protect against price spikes.

Generic Risks of VNM

- **“Utility rates go down.”** To date, the offset rate has always been higher than the PPA rate, but the offset rate could drop below the PPA rate.

Answer: Electricity prices are close to historic lows. There is a far greater risk of higher prices than lower opportunity loss. Eversource plans to increase investment in infrastructure, driving up Electricity continues to be volatile; in 2014 spot prices quadrupled in a matter of days and lasted for a couple months. Offset rates would have to drop sharply for Newtown to lose money in year 1. Our analysis assumes utility rates increasing 2.9% per year. Utility rates have increased over 2.9% per year over the past 20 years (although shale gas prices have dropped prices to historic lows).
 - **“If we act now we could lose out on future technology improvements.”**

Answer: Since the 1970s, when solar photovoltaics first became commercially available, efficiency has improved slowly and improves less than 1% per year (unlike computers, for example, that have improved exponentially). In the meantime, Newtown would give up current savings.
 - **“Solar prices may go down.”**

Answer: Government incentives are also going down, driving prices higher for third party owned solar projects. At the same time, interest rates could go up, increasing developer’s financing costs.
 - **“The panels may not produce 3 MW per hour.”**

Answer: If the panels were damaged, Newtown would pay only for kilowatts that are actually produced.
 - **“The legislature may improve the VNM program.”**

Answer: Unlikely. CT law caps the amount of virtual net metering and utilities have resisted increases. Even if it increases, new capacity may not be enough to meet the demand of new towns that want VNM.
 - **“What if our consumption drops?”**

Answer: Your PPA requires that you buy a minimum number of kilowatts annually. If you properly size your system and do not buy more than, say, 75% of your electricity needs, you will never pay for kilowatts you do not use. Monthly variations will not be a problem since your credits roll over from month to month.
- Note:



Alco and Solomon

Alco Renewable Energy

- Has installed over 30MW of PV solar, mostly utility-scale projects
- Additional 35 MW in development
- Facility in Wyndham, CT has priced utility interconnection costs, in contrast to numerous other VNM proposals.
- Has land and financing to begin construction Fall 2016 with commissioning by Q2 2017.

Solomon Energy

- Not a contractor or consultant. Advises clients and structures deals for a success fee paid by developers
- Has over 54MW of PV solar under contract
- Team member on the CT Virtual Net Metering Working Group and Renewable Energy and Efficiency Business Association (“REEBA”)
- Involved with over 400 solar projects
- Has served dozens of municipalities in NY, NJ and CT

Next Steps

- Confirmation of consumption by Town and or schools
 - This will avoid oversizing the system
- Explain operation of Virtual Net Metering to stakeholders
- City or schools may wish to conduct an RFP
 - RFP would take no longer than 2 weeks
 - Because of requirement that land must be secured before construction can begin, unlikely other bids will be received
- Review, approval by Selectmen, execution of Power Purchase Agreement between Newtown and ALLCO
- Finalize meter numbers with Eversource and notify utility when solar farm is interconnected so credits can begin



SolomonEnergy

A Different Approach to Energy



SolomonEnergy

Christopher Whitman

CEO

cwhitman@SolomonEnergy.com

James Patenaude

Senior Project Manager

jpatenaude@SolomonEnergy.com

(203) 202-9788

solomonenergy.com



Connecticut Virtual Net Metering Opportunity

The information below provides details on the potential savings opportunity with a Power Purchase Agreement (PPA) with the CT Virtual Net Metering (VNM) program.

ASSUMPTIONS		TOTAL						
Town of Newtown		SOLAR OUTPUT (kWh)	SOLAR PPA ELECTRIC RATE (\$/kWh)	SOLAR PPA PAYMENTS (\$)	VNM CREDIT RATE (\$/kWh)	TOTAL VNM CREDITS (\$)	ANNUAL SAVINGS W/SOLAR (\$)	TOTAL SAVINGS W/SOLAR (\$)
PPA Type	Stepped Escalator	1	\$0.098	\$424,125	\$0.121	\$25,437	\$101,312	\$101,312
System Size (wAC)	3,000,000	2	\$0.098	\$422,004	\$0.110	\$477,667	\$55,662	\$156,974
System Size (MWDC)	3.00	3	\$0.098	\$419,894	\$0.099	\$427,319	\$7,425	\$164,398
System Output Year 1 (kWh)	4,350,000	4	\$0.098	\$417,795	\$0.102	\$437,513	\$19,718	\$184,116
Annual System Degradation (%)	0.5%	5	\$0.098	\$415,706	\$0.105	\$447,949	\$32,244	\$216,360
Production Factor (wDC to kWh)	1.45	6	\$0.098	\$413,627	\$0.108	\$458,635	\$45,008	\$261,368
Total Out-of-Pocket Costs (\$)	\$0	7	\$0.099	\$419,790	\$0.111	\$469,576	\$49,786	\$311,153
PPA TERMS		8	\$0.101	\$426,045	\$0.114	\$480,778	\$54,732	\$365,886
PPA Price - Year 1 (\$/kWh)	\$0.098	9	\$0.103	\$432,393	\$0.118	\$492,247	\$59,853	\$425,739
PPA Escalator (%)	0.00%	10	\$0.106	\$438,836	\$0.121	\$503,989	\$65,153	\$490,892
PPA Length (Years)	25	11	\$0.108	\$445,375	\$0.125	\$516,012	\$70,637	\$561,530
Year of Step (Year)	6	12	\$0.110	\$452,011	\$0.128	\$528,321	\$76,311	\$637,840
New Stepped PPA Rate (\$/kWh)	\$0.098	13	\$0.112	\$458,746	\$0.132	\$540,925	\$82,179	\$720,019
New Stepped PPA Escalator (%)	2.00%	14	\$0.114	\$465,581	\$0.136	\$553,828	\$88,247	\$808,266
EVERSOURCE VIRTUAL NET METERING (VNM) RATES		15	\$0.117	\$472,518	\$0.140	\$567,040	\$94,522	\$902,788
Current T&D VNM Credit (\$/kWh)	\$0.068	16	\$0.119	\$479,559	\$0.144	\$580,567	\$101,008	\$1,003,796
Year 1 T&D VNM Credit at 80%	\$0.054	17	\$0.121	\$486,704	\$0.148	\$594,416	\$107,712	\$1,111,507
Year 1 Offset % of T&D Charges (%)	80%	18	\$0.124	\$493,956	\$0.152	\$608,596	\$114,640	\$1,226,147
Year 2 Offset % of T&D Charges (%)	60%	19	\$0.126	\$501,316	\$0.157	\$623,114	\$121,798	\$1,347,945
Year 3 Offset % of T&D Charges (%)	40%	20	\$0.129	\$508,786	\$0.161	\$637,978	\$129,193	\$1,477,138
Annual T&D Rate Increase (%)	2.90%	21	\$0.131	\$516,367	\$0.166	\$653,197	\$136,831	\$1,613,968
Current Generation VNM Credit (\$/kWh)	\$0.067	22	\$0.134	\$524,060	\$0.171	\$668,779	\$144,719	\$1,758,687
Annual Generation Rate Increase (%)	2.90%	23	\$0.137	\$531,869	\$0.176	\$684,733	\$152,864	\$1,911,551
Current Total VNM Credit (\$/kWh)	\$0.121	24	\$0.139	\$539,794	\$0.181	\$701,067	\$161,274	\$2,072,825
		25	\$0.142	\$547,837	\$0.186	\$717,791	\$169,955	\$2,242,779
SUMMARY		Totals	\$0.114	\$11,654,694	\$0.137	\$13,989,414	\$2,242,779	\$2,242,779
Average Savings Per Year (\$)	\$0.022							
Average Savings Per kWh (%)	16%							
Total Savings (\$)	\$2,242,779							

© 2016, Solomon Energy Inc. DISCLAIMER AND CONFIDENTIALITY: All data and information contained herein and provided in connection with this document is based on preliminary estimates and is for evaluation purposes only, is subject to adjustment or modification by Solomon Energy, and is considered confidential and proprietary. The data and information contained herein may not be reproduced, published or distributed to, or for, any third parties without the express prior written consent of Solomon Energy. Utility price increase estimates are based on historical data and should be viewed as speculative estimates only. Estimates are based on a pre-tax basis.